

RESEARCH PAPER

**PREVALENCE AND RISK FACTORS ASSOCIATED WITH
CHOLELITHIASIS IN SITI KHADIJAH HOSPITAL AND UNIVERSITAS
AIRLANGGA HOSPITAL**



Author

Pradityo Rafi Hardono

011911133292

**INTERNATIONAL CLASS MEDICAL PROGRAM
FACULTY OF MEDICINE
UNIVERSITAS AIRLANGGA
SURABAYA
2022**

RESEARCH PAPER

**PREVALENCE AND RISK FACTORS ASSOCIATED WITH
CHOLELITHIASIS IN SITI KHADIJAH HOSPITAL AND UNIVERSITAS
AIRLANGGA HOSPITAL**



Author

Pradityo Rafi Hardono

011911133292

**INTERNATIONAL CLASS MEDICAL PROGRAM
FACULTY OF MEDICINE
UNIVERSITAS AIRLANGGA
SURABAYA
2022**

IR – PERPUSTAKAAN UNIVERSITAS AIRLANGGA

PREREQUISITE SHEET

**PREVALENCE AND RISK FACTORS ASSOCIATED WITH
CHOLELITHIASIS IN SITI KHADIJAH HOSPITAL AND UNIVERSITAS
AIRLANGGA HOSPITAL**

RESEARCH PAPER

This statement is to fulfill the requirement of the research module

Medical Faculty of Universitas Airlangga

Author

Pradityo Rafi Hardono

011911133292

INTERNATIONAL CLASS MEDICAL PROGRAM

MEDICAL FACULTY

UNIVERSITAS AIRLANGGA

SURABAYA

2022

ii

IR – PERPUSTAKAAN UNIVERSITAS AIRLANGGA

APPROVAL SHEET

This research paper has been approved at

Date: 16 November 2022

First Supervisor



Prof. Muhammad Miftahussurur, dr., M. Kes., Sp. PD-KGEH, Ph.D

NIP. 19790929 200812 1 003

Second Supervisor

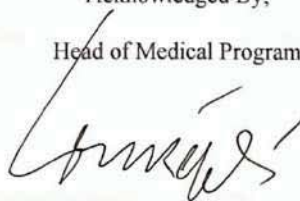


Dr. Budi Utomo, dr., M.Kes

NIP. 19650522 199702 1 001

Acknowledged By,

Head of Medical Program



Dr. Purwo Sri Rejeki, dr., M. Kes

NIP. 19750612 200501 2 0033

iii

SKRIPSI

PREVALENCE AND RISK FACTORS....

PRADITYO RAFI H.

IR – PERPUSTAKAAN UNIVERSITAS AIRLANGGA

EXAMINER DECISION FORM

**PREVALENCE AND RISK FACTORS ASSOCIATED WITH
CHOLELITHIASIS IN SITI KHADIJAH HOSPITAL AND UNIVERSITAS
AIRLANGGA HOSPITAL**

THESIS

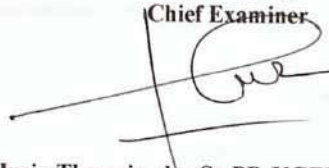
Author:



Pradityo Rafi Hardono
NIM. 011911133292

Approved and accepted after being assessed by the Examiner Team of the
Medical Program, Faculty of Medicine, Universitas Airlangga
Surabaya, 30 November 2022

Approved by,
Chief Examiner



Husin Thamrin, dr., Sp.PD-KGEH, FINASIM.
NIP. 197004292016016101

First Supervisor



Prof. Muhammad Miftahussurur Sp.
PD-KGEH, Ph.D, FINASIM
NIP. 197909292008121003

Second Supervisor



Dr. Budi Utomo, dr., M.Kes
NIP. 196505221997021001

iv

SKRIPSI

PREVALENCE AND RISK FACTORS....

PRADITYO RAFI H.

IR – PERPUSTAKAAN UNIVERSITAS AIRLANGGA

STATEMENT OF ORIGINALITY

The undersigned, I

Name : Pradityo Rafi Hardono

NIM : 011911133292

Study Program : Medical Program

Faculty : Medicine

Stage : Bachelor

Stating that I have not committed plagiarism in the writing of my thesis with a title of,

**PREVALENCE AND RISK FACTORS ASSOCIATED WITH
CHOLELITHIASIS IN SITI KHADIJAH HOSPITAL AND UNIVERSITAS
AIRLANGGA HOSPITAL**

If one day it is proven to have committed plagiarism, then I will receive the sanctions that have been set.

Thus this statement letter I made in real terms.

Surabaya, 30 November 2022



Pradityo Rafi Hardono
NIM 011911133292

v

SKRIPSI

PREVALENCE AND RISK FACTORS....

PRADITYO RAFI H.

v

ACKNOWLEDGEMENT

Praise Allah S.W.T for all his grace, power, and guidance so that the author can complete the research paper titled “Prevalence And Risk Factors Associated With Cholelithiasis In Siti Khadijah Hospital And Universitas Airlangga Hospital”. The author realized this research paper would not be complete without participation, help, support, and motivation from various people, this research paper would not complete. Therefore, the author would like to thank all the following people generously.

1. Prof. Dr. Muhammad Nasih S. E., M. T., Ak., CMA as the Chancellor of Universitas Airlangga who gave the author the opportunity to study in Universitas Airlangga.
2. Prof. Dr. Budi Santoso, dr., Sp. OG (K) as the Dean of Faculty of Medicine, Universitas Airlangga who allowed the author to continue the author’s education and complete the author’s research paper here.
3. Dr. Purwo Sri Rejeki, dr., M. Kes. as the Program Coordinator of Faculty of Medicine, Universitas Airlangga who always facilitated the process of completing this research paper.
4. Dr. Pudji Lestari, dr., M. Kes. as the Head Coordinator of the Research Module who always guided, facilitated, and permitted the author to complete this research paper.
5. Prof. Muhammad Miftahussurur, dr., Sp. PD-KGEH, Ph. D., FINASIM as the first supervisor who always spares his free time to guide, mentor, and give important advice not only in the process of completing this research paper but for the future.

6. Dr. Budi Utomo, dr., M.Kes. as the second supervisor who always spares her free time to guide, mentor, and give important advice for not only in the process of completing this research paper but for the future.
7. Dr. H. Muhammad Hamdan, dr., Sp. S (K) as the Director of Siti Khodijah Muhammadiyah Sepanjang Sidoarjo who gave the author the opportunity to conduct the research in Siti Khodijah Muhammadiyah Sepanjang Sidoarjo.
8. M. Perdana Airlangga, dr., Sp. JP as the Head Coordinator of Research Ethical Committee of Siti Khodijah Muhammadiyah Sepanjang Sidoarjo who gave the author permission to conduct the research in Siti Khodijah Muhammadiyah Sepanjang Sidoarjo.
9. All Medical Record Department staff of Siti Khodijah Muhammadiyah Sepanjang Sidoarjo who gave the author the opportunity and permission to access the medical record database to complete this research.
10. Prof. Dr. Nasronudin, dr., Sp.PD., K-PTI., FINASIM as the Director of Universitas Airlangga Hospital who gave the author the opportunity to conduct the research in Universitas Airlangga Hospital.
11. All Medical Record Department staff of Universitas Airlangga Hospital who gave the author the opportunity and permission to access the medical record database to complete this research.
12. The author's family: Nanang Rudianto Widodo, dr., Sp. OG (K) as the author's father, Batari Retno Minanti, dr., Sp. PD as the author's mother, and Nadya Paramitha Rizki Rahmadiani as the author's sister for the patience, understanding, moral support, and motivation while completing this research.
13. The author's colleagues: Daffa Muhammad Cantona Guerin, Hafidz Naufal Dhiyaulhaq, Hanif Ardiansyah Sulistya, and Muhammad Muhibbudin Hilmy

Asari who always gave the author support, assistance, knowledge, and motivation during the process of completing this research paper.

14. The author's colleagues: Ahmad Akmaluddin, Alfi Syahriani, Almira Saskia Sabila, Muhammad Harits, Nabilah Izzatunnisa, Nadira Zahra Maulidya Permana who always gave the author support and encouragement during the process of completing this research.
15. The author's colleagues from "Pahlawan Grabik" who always supported the author while completing this research.
16. All colleagues from COSTAE 2019 who always supported the author during the process of completing this research.
17. Dearest, Khaisyadiba Ainaya Alfitra who always gave the author support and encouragement during the process of completing this research.
18. All parties who have helped during the process of completing this research which the author can't mention one by one

The author realized that this research paper is far from perfect. Therefore, the author still needs guidance and advice from the readers to improve this research paper. The author hopes this research paper can benefit all parties in need.

Surabaya, 30 October 2022

Pradityo Rafi Hardono

RINGKASAN

**PREVALENCE AND RISK FACTORS ASSOCIATED WITH
CHOLELITHIASIS IN SITI KHADIJAH HOSPITAL AND UNIVERSITAS
AIRLANGGA HOSPITAL**

Pradityo Rafi Hardono

Kolelitiasis atau batu empedu adalah endapan cairan empedu yang mengeras dan terbentuk di dalam kantong empedu (Tanaja et al., 2020). Kolelitiasis adalah batu yang terbentuk di kantong empedu yang terdiri dari kolesterol, bilirubin, dan empedu (Jones et al., 2021). Batu empedu adalah endapan cairan empedu yang mengeras yang dapat terbentuk di dalam kantong empedu. Ukuran batu bervariasi dari sekecil butiran pasir hingga sebesar bola golf (Njeze, 2013). Di Indonesia belum ada data dari Riset Kesehatan Dasar (Riskesdas) dan Kementerian Kesehatan (Kemenkes) tentang prevalensi batu empedu.

Penyebab terbentuknya batu empedu bersifat multifaktorial. Sebuah penelitian menunjukkan bahwa batu empedu yang paling sering terjadi adalah pembentukan batu kolesterol. Faktor risiko batu empedu berdasarkan berbagai penelitian tentang batu empedu antara lain 4F: Female, Forty, Fat, Fertile (Pak and Lindseth, 2016). Banyak faktor yang mempengaruhi kejadian kolelitiasis adalah faktor keluarga, kadar estrogen, insulin, dan kolesterol, penggunaan kontrasepsi, obesitas, gangguan pencernaan, penyakit jantung koroner, kehamilan, merokok, peminum alkohol, dan penurunan berat badan dalam waktu singkat (Djumhana, 2010).

Penelitian ini merupakan penelitian analisis observasional dengan desain *cross-sectional* yang ditujukan untuk mencari hubungan antara faktor risiko batu empedu dengan kejadian batu empedu. Data yang digunakan adalah data rekam medis. Penelitian ini dilaksanakan mulai bulan November 2021 hingga bulan September 2022. Penelitian ini melibatkan data 221 pasien yang menjalani USG abdomen di Rumah Sakit Siti Khodijah dan 215 pasien yang menjalani USG abdomen di Rumah Sakit Universitas Airlangga. Variabel yang diteliti adalah hubungan antara kolelitiasis terhadap usia, jenis kelamin, kelompok etnis, merokok, konsumsi alkohol, indeks massa tubuh, pekerjaan, riwayat keluarga penyakit batu empedu, diabetes mellitus, hipertensi, riwayat penyakit hati, TDS, TDD, TC, HDL, LDL, TG, penurunan berat badan mendadak, kontrasepsi (wanita), dan riwayat kehamilan. Uji analisis data akan menggunakan uji korelasi Spearman's Rank.

Hasil penelitian yang didapat dari 436 data rekam medis pasien menunjukkan bahwa 21,3% pasien yang menjalani USG abdomen menderita kolelitiasis. Faktor-faktor yang mendominasi adalah usia 51-60 tahun (35.9 %), wanita (51 %), suku Jawa (64.5 %), tidak merokok (96.9 %), tidak mengonsumsi alkohol (99 %), berprofesi sebagai guru (42.2 %), dan obesitas (42.2 %). Riwayat penyakit yang pernah diderita pasien didominasi oleh tidak ada riwayat keluarga sakit batu empedu (96.4 %), tidak ada riwayat diabetes mellitus (78.6 %), tidak ada riwayat hipertensi (79.2 %), dan tidak ada riwayat penyakit liver (94.8 %). Hasil klinis dan laboratoris pasien didominasi oleh tekanan darah sistolik normal (55.7 %), tekanan darah diastolik normal (69.3 %), tidak ada penurunan berat badan (98.4 %), rendah kolesterol total (21.15), rendah HDL (24.2

%), diatas optimal LDL (26.4 %), rendah trigliserida (22 %), tidak menggunakan kontrasepsi (100 %), dan ada riwayat kehamilan (86.7 %).

Hasil yang dikumpulkan dari 436 data rekam medis menunjukkan bahwa 43,8% pasien yang menjalani USG abdomen menderita kolelitiasis. Suku, pekerjaan, dan penggunaan kontrasepsi dengan kolelitiasis menunjukkan hubungan yang bermakna ($p = 0,002$; $p = 0,001$; $p = 0,006$). Namun, faktor lain tidak menunjukkan hubungan yang signifikan. Etnis memiliki pengaruh terhadap diagnosis kolelitiasis.

ABSTRAK

**PREVALENCE AND RISK FACTORS ASSOCIATED WITH
CHOLELITHIASIS IN SITI KHADIJAH HOSPITAL AND UNIVERSITAS
AIRLANGGA HOSPITAL**

Pradityo Rafi Hardono

Latar Belakang: Penyakit batu empedu merupakan masalah kesehatan utama di dunia. Diagnosis baku emas untuk mendiagnosis batu empedu adalah USG. Penyebab pembentukan batu empedu adalah multifaktorial. Peningkatan usia, etnis, jenis kelamin perempuan, riwayat penyakit, dan riwayat keluarga diketahui memiliki peran yang signifikan dalam perkembangan batu empedu. Merokok, konsumsi alkohol, indeks massa tubuh, kolesterol, kontrasepsi dan kehamilan, serta penurunan berat badan secara tiba-tiba juga terbukti menyebabkan batu empedu.

Tujuan: Untuk menganalisis hubungan antara faktor risiko dengan diagnosis kolelitiasis

Metode: Penelitian ini menggunakan analisis observasional dengan pendekatan *cross-sectional* menggunakan data rekam medis untuk mengidentifikasi hubungan antara kolelitiasis terhadap usia, jenis kelamin, kelompok etnis, merokok, konsumsi alkohol, indeks massa tubuh, pekerjaan, riwayat keluarga penyakit batu empedu, diabetes mellitus, hipertensi, riwayat penyakit hati, SBP, DBP, TC, HDL, LDL, TG, penurunan berat badan mendadak, kontrasepsi (wanita), dan riwayat kehamilan. Analisis statistik diolah menggunakan aplikasi SPSS versi 25 dengan uji korelasi Spearman's Rank.

Hasil: Hasil yang dikumpulkan dari 436 data rekam medis menunjukkan bahwa 21,3% pasien yang menjalani USG abdomen menderita kolelitiasis. Faktor-faktor yang mendominasi adalah usia 51-60 tahun (35.9 %), wanita (51 %), suku jawa (64.5 %), tidak merokok (96.9 %), tidak mengonsumsi alkohol (99 %), berprofesi sebagai guru (42.2 %), dan obesitas (42.2 %). Riwayat penyakit yang pernah diderita pasien didominasi oleh tidak ada riwayat keluarga sakit batu empedu (96.4 %), tidak ada riwayat diabetes mellitus (78.6 %), tidak ada riwayat hipertensi (79.2 %), dan tidak ada riwayat penyakit liver (94.8 %). Hasil klinis dan laboratoris pasien didominasi oleh tekanan darah sistolik normal (55.7 %), tekanan darah diastolic normal (69.3 %), tidak ada penurunan berat badan (98.4 %), rendah kolesterol total (21.1 %), rendah HDL (24.2 %), di atas optimal LDL (26.4 %), rendah trigliserida (22 %), tidak menggunakan kontrasepsi (100 %), dan ada riwayat kehamilan (86.7 %). Suku, pekerjaan, dan penggunaan kontrasepsi dengan kolelitiasis menunjukkan hubungan yang bermakna ($p = 0,002$; $p = 0,001$; $p = 0,006$). Namun, faktor lain tidak menunjukkan hubungan yang signifikan. Etnis memiliki pengaruh terhadap diagnosis kolelitiasis. Karakteristik pasien cholelithiasis di kedua rumah sakit ini tidak berpengaruh dan tidak berbeda jauh.

Kesimpulan: Etnis, pekerjaan, dan penggunaan kontrasepsi menunjukkan hubungan yang bermakna dengan diagnosis kolelitiasis. Etnis memiliki pengaruh terhadap diagnosis kolelitiasis.

Kata Kunci: Kolelitiasis, batu empedu, faktor risiko

ABSTRACT

PREVALENCE AND RISK FACTORS ASSOCIATED WITH CHOLELITHIASIS IN SITI KHADIJAH HOSPITAL AND UNIVERSITAS AIRLANGGA HOSPITAL

Pradityo Rafi Hardono

Background: Gallstone disease are major health problem worldwide. The gold standard diagnosis for diagnosing gallstone is ultrasound. The causes of gallstone formation are multifactorial. Increasing age, ethnicity, female gender, history of diseases, and family history are known to have a significant role in the development of gallstone. Smoking, alcohol consumption, body mass index, cholesterol, contraception and pregnancy, and sudden weight loss levels are also proven to cause gallstone.

Aim: To analyze the relationship between risk factors with the diagnosis of cholelithiasis

Method: This study is a analytic retrospective study which is conducted using secondary data based on the medical records of cholelithiasis patients who undergo abdominal ultrasound. We include data about age, gender, ethnic group, smoking, alcohol consumption, body mass index, occupation, family history of gallstone disease, diabetes mellitus, hypertension, history of liver disease, systolic blood pressure, diastolic blood pressure, total cholesterol, high density lipoprotein, low density lipoprotein, triglyceride, sudden weight loss, contraception (women), and history of pregnancy.

Result: The results collected from 436 medical records showed that 21.3% of patients who underwent abdominal ultrasound had cholelithiasis. The dominating factors were 51-60 years old (35.9%), female (51%), Javanese (64.5%), not smoking (96.9%), not consuming alcohol (99%), working as a teacher (42.2%), and obesity (42.2%). The patient's medical history was dominated by no family history of gallstones (96.4%), no history of diabetes mellitus (78.6%), no history of hypertension (79.2%), and no history of liver disease (94.8%). Clinical and laboratory results of patients were dominated by normal systolic blood pressure (55.7%), normal diastolic blood pressure (69.3%), no weight loss (98.4%), low total cholesterol (21.15), low HDL (24.2%), above optimal LDL (26.4%), low triglycerides (22%), did not use contraception (100%), and had a history of pregnancy (86.7%). Ethnicity, occupation, and contraceptive use with cholelithiasis showed a significant relationship ($p = 0.002$; $p = 0.001$; $p = 0.006$). However, other factors did not show a significant relationship. Ethnicity has an influence on the diagnosis of cholelithiasis ($p = 0.002$). The characteristics of cholelithiasis patients in these two hospitals had no influence and were not significantly different.

Conclusion: Ethnicity, occupation, and contraception use shows a significant relationship with the diagnosis of cholelithiasis. Ethnicity has an influence on the diagnosis of cholelithiasis.

Keyword: Cholelithiasis, gallstones, risk factors

TABLE OF CONTENTS

Front Cover.....	i
Inside Cover.....	i
Prerequisite Sheet	ii
Approval Sheet	iii
Examiner Decision Form	iv
Statement Of Originality	v
Acknowledgement.....	vi
Summary.....	ix
Abstract.....	xi
TABLE OF CONTENTS	xiii
LIST OF TABLES	xvi
LIST OF PICTURES.....	xviii
LIST OF ATTACHMENTS.....	xix
LIST OF ABBREVIATIONS	xx
CHAPTER 1 INTRODUCTION.....	1
1.1 Background.....	1
1.2 Problem Formulation	4
1.3 Research Objectives.....	4
1.4 Benefits of Research	7
CHAPTER 2 LITERATURE REVIEW.....	8
2.1 Definition of Cholelithiasis.....	8
2.2 Anatomy and Physiology of The Gallbladder	8
2.2.1 Anatomy	8
2.2.2 Physiology	9
2.3 Pathogenesis.....	10
2.4 Gallstone Type.....	11
2.4.1 Cholesterol Stones	11
2.4.2 Pigment Stones	11
2.4.3 Mixed Stone.....	11
2.5 Epidemiology	12
2.6 Risk factor	13
2.6.1 Age	13
2.6.2 Gender.....	13
2.6.3 Ethnicity.....	14
2.6.4 Body Mass Index	15
2.6.5 Family History	15
2.6.6 Smoking.....	16
2.6.7 Alcohol Consumption.....	16
2.6.8 Diabetes Mellitus	17
2.6.9 Hypertension.....	18
2.6.10 History of Liver Disease.....	18
2.6.11 Serum Cholesterol	19
2.6.12 Sudden Weight Loss	19
2.6.13 Contraception.....	20
2.6.14 History of Pregnancy	21
2.7 Complications	21
2.7.1 Acute Cholecystitis.....	21

2.7.2 Acute Cholangitis	22
2.8 Clinical Symptoms.....	22
2.9 Diagnosis	23
2.9.1 History Taking	23
2.9.2 USG	23
2.10 Prognosis.....	24
2.11 Management.....	25
CHAPTER 3 CONCEPT FRAMEWORK AND HYPOTHESIS.....	26
3.1 Conceptual Framework.....	26
3.2 Conceptual Framework Explanation	27
3.3 Hypothesis	29
CHAPTER 4 RESEARCH METHODS	31
4.1 Research Design	31
4.2 Population, Sample Size, and Sampling Techniques.....	31
4.2.1 Population	31
4.2.2 Research Sample.....	31
4.2.3 Sample Size	32
4.2.4 Sampling Techniques.....	32
4.3 Operational Variables and Definitions	32
4.3.1 Operational Definitions	33
4.4 Research Instruments	37
4.5 Research Location and Time	37
4.5.1 Research Time	37
4.5.2 Research Location	38
4.6 Data Collection Procedures	38
4.7 Research Operational Framework	39
4.8 Data Processing and Analysis.....	40
4.9 Ethical Aspects	41
CHAPTER 5 RESULT.....	43
5.1 Characteristics of Cholelithiasis Patients.....	43
5.2 Correlation Between Risk Factors and Cholelithiasis	53
5.3 Regression Logistic Analysis.....	63
CHAPTER 6 DISCUSSION	64
6.1 Relationship Between Age and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital.....	64
6.2 Relationship Between Gender and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital.....	64
6.3 Relationship Between Ethnicity and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital.....	65
6.4 Relationship Between Smoking and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital.....	66
6.5 Relationship Between Alcohol Consumption and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital.....	66
6.6 Relationship Between Occupation and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital	67
6.7 Relationship Between Body Mass Index and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital	67
6.8 Relationship Between Family History of Cholelithiasis and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital	68

6.9 Relationship Between Diabetes Mellitus and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital	69
6.10 Relationship Between Hypertension and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital	69
6.11 Relationship Between History of Liver Disease and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital.....	70
6.12 Relationship Between SBP and DBP and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital	71
6.13 Relationship Between Serum Cholesterol and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital.....	71
6.14 Relationship Between Weight Loss and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital	72
6.15 Relationship Between Contraception Usage and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital.....	73
6.16 Relationship Between Pregnancy History and Cholelithiasis in Siti Khadijah Hospital and Universitas Airlangga Hospital.....	73
CHAPTER 7 CONSLUSION AND SUGGESTION	75
7.1 Conclusion	75
7.2 Suggestion.....	77
REFERENCES	78
ATTACHMENTS	86

LIST OF TABLE

Table 4.1 Operational Definition.....	3
Table 5.1 Demographic distribution on patients undergo abdominal ultrasound in Siti Khodijah Hospital and Airlangga University Hospital	45
Table 5.2 History of diseases distribution on patients undergo abdominal ultrasound in Siti Khodijah Hospital and Airlangga University Hospital.....	48
Table 5.3 Clinical findings distribution on patients undergo abdominal ultrasound in Siti Khodijah Hospital and Airlangga University Hospital.....	49
Table 5.4 Laboratory findings distribution on patients undergo abdominal ultrasound in Siti Khodijah Hospital and Airlangga University Hospital	51
Table 5.5 Contraception use and pregnancy history distribution on patients undergo abdominal ultrasound in Siti Khodijah Hospital and Airlangga University Hospital	53
Table 5.6 Spearman's rank correlation test between age and the diagnosis of cholelithiasis	54
Table 5.7 Spearman's rank correlation test between gender and the diagnosis of cholelithiasis	54
Table 5.8 Spearman's rank correlation test between ethnicity and the diagnosis of cholelithiasis	55
Table 5.9 Spearman's rank correlation test between smoking and the diagnosis of cholelithiasis	55
Table 5.10 Spearman's rank correlation test between alcohol consumption and the diagnosis of cholelithiasis.....	56
Table 5.11 Spearman's rank correlation test between occupation and the diagnosis of cholelithiasis.....	56
Table 5.12 Spearman's rank correlation test between body mass index and the diagnosis of cholelithiasis	57
Table 5.13 Spearman's rank correlation test between family history of cholelithiasis and the diagnosis of cholelithiasis	57
Table 5.14 Spearman's rank correlation test between diabetes mellitus diseases and the diagnosis of cholelithiasis.....	58
Table 5.15 Spearman's rank correlation test between hypertension and the diagnosis of cholelithiasis.....	58
Table 5.16 Spearman's rank correlation test between history of liver and the diagnosis of cholelithiasis	59
Table 5.17 Spearman's rank correlation test between systolic blood pressure and the diagnosis of cholelithiasis.....	59
Table 5.18 Spearman's rank correlation test between diastolic blood pressure and the diagnosis of cholelithiasis.....	60
Table 5.19 Spearman's rank correlation test between total cholesterol and the diagnosis of cholelithiasis	60
Table 5.20 Spearman's rank correlation test between HDL and the diagnosis of cholelithiasis	61
Table 5.21 Spearman's rank correlation test between LDL and the diagnosis of cholelithiasis	61
Table 5.22 Spearman's rank correlation test between triglyceride and the diagnosis of cholelithiasis	62
Table 5.23 Spearman's rank correlation test between weight loss and the diagnosis of cholelithiasis.....	62

Table 5.24 Spearman's rank correlation test between contraception use and the diagnosis of cholelithiasis.....	63
Table 5.25 Spearman's rank correlation test between pregnancy history and the diagnosis of cholelithiasis.....	63

LIST OF PICTURES

Figure 2.1 Anatomy of the Gallbladder.....	9
Figure 2.2 Worldwide prevalence of gallstones in women	12
Figure 2.3 Gallstones in the gallbladder column	24
Figure 2.4 Gallstones in the gallbladder column	24
Figure 3.1 Conceptual Framework	26
Figure 3.2 Research Operational Framework.....	40

LIST OF ATTACHMENTS

Attachment 1: Research Timeline	87
Attachment 2: Spearman's Rank Correlation Test	88

LIST OF ABBREVIATIONS

BMI	: Body Mass Index
DBP	: Distolic Blood Pressure
HDL	: High Density Lipoprotein
LDL	: Low Density Lipoprotein
SBP	: Systolic Blood Pressure
TC	: Total Cholesterol
TG	: Trigliceride
USG	: Ultrasound
WHO	: World Health Organization